Army Modernization Plan 2001

Overview

The Army has made great strides in implementing the Transformation process announced by the Army leadership in October 1999.

- The Army has made tough decisions to reprioritize resources to support new priorities.
- The Army has taken aggressive steps to accelerate essential science and technology (S&T) efforts to identify revolutionary new technologies for our future Army.
- The Army has reorganized two brigades at Fort Lewis, Washington, to a new design. Those units are currently training using new warfighting tactics, techniques, and procedures (TTP).
- The Army has awarded a contract for a family of Interim Armored Vehicles (IAV) to equip new interim brigade units with needed capabilities for contingency missions.
- The Army has devoted the necessary resources to maintain its warfighting readiness, which remains the top priority and is the basis upon which we execute our nonnegotiable contract with the American people—to fight and win our Nation's wars decisively.

Very importantly, Congress and the Department of Defense (DoD) have responded positively to our overall plan by providing both strong support in principle as well as invaluable additional resources to help establish initial momentum in this process.

The Army's bold plan to transform itself came as a result of a thorough examination of the requirements established by the National Security Strategy (NSS) and National Military Strategy (NMS), an identification of future trends and directions affecting the future world environment and related strategic challenges to the United States, and full consideration to *Joint Vision 2020 (JV 2020)* that describes how U.S. forces will plan to operate in the present and in the future. The result was an innovative and forward-looking plan for a comprehensive **Transformation** that would apply to the entire Army, including Active Component (AC) and Reserve Component (RC), and organizational and institutional structures. This overall process has the goal of ensuring the Army's continued **strategic relevance** well into the future.

The Army's Vision is for a highly responsive, capabilities-based force able to meet all potential future threats and challenges. Building upon the preservation of essential current capabilities and the achievement of new ones through the application of revolutionary technologies, the Army seeks to maintain its position as the preeminent land force in the world. In this role, however, the Army fully

participates as a member of a joint team, providing an array of capabilities available to the Nation's leaders. Moreover, the Army expects and plans on all missions being carried out in full cooperation with, and often dependence on, our fellow Services. The Army always has and will continue to depend on the Air Force and Navy to get to the operational theater. Hence, the achievement of adequate lift assets is of particular importance to the Army, as well as to the overall military preparedness of the Nation. Furthermore, the Army actively seeks close cooperation with our fellow Services throughout Transformation, as evident in recent coordination between the Army and the U.S. Marine Corps. This type of cooperative effort will be needed with all Services, as well as with our allies with whom future missions will most likely be conducted.

To achieve the Transformation goals—strategic responsiveness and dominating capabilities—the Army has a Modernization Strategy which focuses on developing and fielding revolutionary new capabilities for the future force, meeting immediate capability shortfalls through the fielding of new systems and organizations in the near future, and maintaining and improving those warfighting capabilities vital to fulfilling all missions assigned to the Army in the foreseeable future. Implementation of this strategy requires hard decisions and clear priorities among competing needs, and that it is the essence of the Army's Investment Strategy. This strategy is characterized by a fundamental shift to emphasis on the development of new systems and technologies that will support the future Army, or Objective Force. Essential to this strategy, however, is a parallel component that balances modernization efforts and strategic risks by maintaining adequate readiness and capabilities for the Army of today. The true reflection of this Investment Strategy is the Army component of the FY02 President's Budget (PB02). This budget reflects the clear priorities and choices that the Army has identified and made to implement Transformation.

The Army has made measurable progress in a short time. Despite the initial progress, definite shortfalls exist that must be addressed to achieve complete success. Transformation is a long-term process, and the Army needs continued support and additional resources to preserve momentum for the future force while still providing a force today that meets the essential readiness requirements.

Purpose

The *2001 Army Modernization Plan* focuses on building combat-capable units to support the Transformation of the Army and ultimately to ensure the world's preeminent ground force maintains the capability to fight and win our Nation's wars. This *Modernization Plan* describes the intent of Army investments over time to support transformation of the Army into a force that is strategically responsive and dominant at every point on the spectrum of operations. Together with the *Army Science and Technology Master Plan*, it provides the rationale and justification for the research, development, and acquisition (RDA) portion of the Army's program in

support of the PB02. Specifically, the *Modernization Plan*:

- Describes Army Transformation and identifies how modernization supports Transformation.
- Describes the future operational environment the Army is likely to face and the future warfighting concepts the Army is expected to use in that environment.
- Explains how Army modernization in support of Transformation is directly linked to the *JV 2020* Operational Concepts.
- Focuses modernization through the critical lenses of:
  - Transformation
  - Total Package Fielding
  - Unit Set Fielding
- Describes the Army's Modernization and Investment Strategies.
- Explains the critical necessity for the Objective, Interim, and Legacy Forces.
- Communicates Fiscal Year 2002 (FY02) budget priorities, identifies shortfalls, and shapes the conditions for Army budget planning through FY07.

The *Modernization Plan* does not offer the following:

- Specific details on all RDA programs, to include system programmatics (dollars, quantities). This information is provided in other documents to include the *U.S. Army 2001 Weapon Systems Handbook.*
- Specific commitment for budget figures for FY 2003-2007 and beyond. Any information reflected for these years is an estimate only based on current Army planning and is subject to change.
- Modernization schedules for units that are published and disseminated separately.
- Installation, training, and leader development programs related to modernization.

The *Modernization Plan* discusses specific time frames that are defined as near-term, 2001-2007; mid-term, 2008-2017; and far-term, 2018-2035.

The Changing Conduct of War

The nature of 21st century warfare will remain little changed from warfare throughout recorded history. An act of violence undertaken to impose one group's will on another, war continues to have several enduring qualities. First, "war is a continuation of political activity by other means." No state or group engages in war without defining political objectives. War differs from other forms of state and non-state competition and interaction mainly in the ways and means used. Second, war is conducted in a dynamic environment filled with uncertainty and risk. Many complex variables combine to limit predictability and certainty. Outcomes are not determined by mathematical calculations but by the creativity of the commander, the artful employment of its forces, and the capabilities of those forces. Third, war remains an act of violent compulsion to achieve decisive, conclusive results. Conclusion of conflict occurs either

when the enemy admits defeat and agrees to a negotiated end of hostilities or when it cannot continue. Finally, war will remain brutal, ugly, destructive, and personal, and it will continue to require physical and mental endurance of soldiers, leaders, and units.

While the nature of war changes slowly over time, the conduct of war is constantly undergoing change in response to new concepts, technologies, and capabilities. How armed forces adapt to change determines their readiness to confront future operational challenges and threats. Applied immediately, technical innovations can provide battlefield advantage, particularly when they facilitate or complement new ways to conduct war. However, new armaments employed in old ways do not necessarily guarantee advantage. New ways to fight may confound and overwhelm an enemy force even if technical superiority is not achieved. Rapid and continuing innovation presents significant challenges for adversaries, putting them in the position of playing a continuous game of "catch up." Conversely, creative adversaries have countered qualitative superiority, new technologies, and new employment methods with both symmetric and asymmetric methods.

The Industrial and Information Revolutions transformed society and the ways and means by which warfare is conducted. Over the past several hundred years, the development of the rifled musket, machine gun, radio, truck, tank, airplane, and microprocessor radically changed the conduct of war. In the American Civil War, over 1,000 soldiers were required to defend one linear mile of frontage. By World War II, the ratio had decreased to less than 400 for the same frontage. This trend is continuing. Responsive sensor-shooter linkages and improved precision munitions are increasing the effective firepower of military forces. To survive in the future, forces will require greater dispersion thereby decreasing the ratio of forces to space. Conversely, the increased range and lethality of weapons coupled with enhanced mobility and information management expand the size of the area of operations able to be controlled and dominated by a force of any size.

The widespread proliferation of advanced capabilities and new technologies, coupled with new concepts for their employment, are leading to a rapidly expanding, multidimensional battlespace. Operations are becoming more distributed in time, space, and purpose. Spatial relationships between opposing forces are increasingly nonlinear, blurring the distinctions between traditional deep, close, and rear operations. Warfare is also increasingly joint and multinational, with interagency participation. To win decisively, the joint force commander must threaten or attack the enemy in all dimensions—air, land, sea, space, and cyberspace. Multidimensional warfare provides the most certain means to overwhelm an adversary and compel its defeat. Ultimately, however, the outcome is most often determined by a decisive, synchronized assault requiring well-trained and equipped soldiers.

Figure 1. Future Operational Environment

The Future Operational Environment

Over the next two decades, U.S. armed forces will operate in a geostrategic environment of considerable instability (Figure 1). New regional powers and transnational actors will emerge onto the global scene as today's driving forces of demographics, economics, and technology move both developed and developing states into global economic networks and alter the balance of power within regions. Global friction will occur as cultures, religions, governments, and economies interact in a highly competitive global setting. Over the past decade, there have been two major wars involving forces outside the affected region, more than 50 ethnic wars, and 170 border conflicts. There is every indication that violence on transnational, national, and subnational levels will continue for the next 20 years and beyond.

In spite of this global instability, most analysts agree that if current trends continue, the United States could enjoy a period of relative strategic calm in which no single foreign power could threaten its vital interests with conventional military forces. However, the establishment of regional alliances, short-term coalitions, or reallocation of spending priorities could quickly alter this trend. Even without significant increases in spending, competitors will emerge over the next two decades to challenge U.S. interests on a regional basis. Furthermore, ethnic rivalries and nationalism will increase as a source of international instability. In addition, increasing transnational threats such as international crime syndicates, terrorist networks, and drug cartels pose nontraditional security problems. Indeed, the most dangerous challenge will be combinations of state, nonstate, and transnational actors with global reach. For the foreseeable future, nations will remain wedded to strategies that have at their core the

presence, use, and threatened use of military power as essential elements achieving national objectives.

In this environment, there is potential for any regional crisis to rapidly expand into a major theater war (MTW). For this reason, early engagement and rapid response that inhibit crisis expansion are the most common operations conducted in today's settings. These operations represent smaller scale contingencies (SSCs) that fall below the threshold of general war, but which typically involve combat actions that are limited in scope and objective. Whether in SSC or MTW, military operations in the foreseeable future will become more dynamic and less predictable.

During the Cold War, most nations adopted military constructs patterned after those of the two superpowers. Consequently, military operations around the world displayed a high degree of consistency. This is rapidly changing. States with the means to do so are pursuing lessons learned from U.S. operations and adopting professional qualities while incorporating adaptive strategies. These militaries are shedding Cold War patterns and developing capabilities more suitable to their particular cultures, circumstances, and threats. They are streamlining structures, creating more professional, mobile, and mature capabilities with greater focus on regional employment to satisfy long simmering grudges or hegemonic ambitions. In general, these states are improving ground forces, communications, intelligence, and special operations force capabilities. Those who believe themselves to be threatened by the United States are developing adaptive strategies, tactics, and force designs suitable to exploit perceived vulnerabilities and to counter or mitigate U.S. strengths. Overall, potential adversaries are basing their investments in military technologies on their perceptions of how the United States has historically operated.

In general, common foreign perceptions of the United States are:

- It is unwilling to accept heavy losses and is risk-averse.
- It avoids close combat and relies on standoff technologies and air superiority.
- Its leadership is very sensitive to domestic and world opinion.
- It lacks commitment over time.
- Its pattern of military operations is predictable.

Because the United States has a military largely dependent upon force projection, it is tied to a strategy requiring entry operations and a deliberate build up of force capabilities as part of its operational construct. Today, this strategy demands airfields and seaports in the area of operations, forward operating bases for air forces, significant in-theater logistical stockpiles, secure air and sea lines of communication, technical intelligence, surveillance and reconnaissance capability, as well as long-distance communications for command and control. These perceptions represent critical vulnerabilities that are assailable.

The vulnerability most frequently discussed among potential U.S.

adversaries is the need for U.S. forces to gain access to the area of operations. This discussion has led to a significant investment of regional powers in anti-access capabilities that will soon increase the risk to U.S. power projection, especially the positioning of friendly forces within operational reach of enemy capabilities. Adversaries will seek to employ advanced capabilities, particularly long-range strike, to deny, delay, and degrade U.S. intervention, creating an operational exclusion zone that can only be breached at great cost. The longer the enemy can delay effective U.S. response, the greater its chances for success. While this rising challenge will be offset to some extent by the increasing strategic reach of U.S. forces, it presents a dilemma to U.S. leaders and opportunities to U.S. opponents. Operations constructed on the employment of strategic reach capabilities alone will likely be short in duration, limited in objective, difficult to sustain, and susceptible to interdiction.

Failing to deny access, the enemy will attempt to degrade U.S. force projection, hold initial gains, and extend the conflict while preserving its own military capability. Recognizing its vulnerability to U.S. precision strike and control of the air, the enemy will likely forego mass formations and momentum through use of echelons and pursue a policy of selective precision strike, maneuver, and other asymmetric actions. To reduce exposure and complicate U.S. targeting, the adversary will hide and disperse large formations in areas of physical and moral sanctuary often located in complex, urban terrain and shielded by civilians and man-made structures. From this largely defensive posture, the enemy will marshal precision capabilities in time and space to strike carefully selected targets to demonstrate U.S. vulnerability, create casualties, or to degrade or destroy specific capabilities.

Asymmetric actions will likely include use of special operations forces, terror, long-range strike, weapons of mass effects, and information capabilities. With respect to the latter, adversaries, both small and large, will attempt to counter U.S. strengths by attacking our critical dependence on Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) as well as our ability to sustain positive informational interfaces with host nations, the media, and multinational or interagency partners. It will aggressively conduct strategic operations to degrade U.S. national will, fracture alliances and coalitions, and limit the scope of U.S. involvement.

Once forces are committed to the area of operations, a capable U.S. adversary will not always avoid battle. Although dispersed to counter U.S. advantages in precision engagement, it will conduct focused, decentralized operations when it perceives an advantage or opportunities exist for decisive offensive action. Choosing objectives carefully in order to achieve maximum effects, it will attempt to initiate force-on-force battles at a time and place of its choosing, integrating nonlinear maneuver and all-source (long- and short-range) precision fires, with simultaneous operations by unconventional and special purpose forces. The focus will be on a system

warfare approach where the objective of combat action is to rob the opposing force of the benefits derived from its system-of-systems synergy. It will attempt to offset air, intelligence, surveillance, and reconnaissance and other technological advantages by fighting in complex terrain and urban environments where it can gain sanctuary from U.S. effects, or by fighting during periods of reduced visibility, while denying these areas and their inherent protective characteristics to U.S. forces. Overall, even though the enemy's general posture is defensive in character, the effect will be to create conditions where U.S. forces remain under constant exposure to focused offensive action, synchronized and initiated from dispersed locations.

Future Army forces must be capable of effective responses against both modernized conventional forces employed unconventionally, as well as unconventional forces and means employed in accordance with asymmetric strategies and tactics. More importantly, the focus of potential adversaries on developing ways, ends, and means to deal with U.S. forces suggests that historical success will not be a reliable indicator of future military operations. The real test for dealing with the future threat is the ability of U.S. armed forces in general and the Army in particular to maintain its current decisive overmatch while developing strategies, doctrine, organizations, and systems to fight adaptive adversaries. Army forces must have the ability to change faster than the enemy can react by fielding future forces that possess rapid mobility; endurance; precision fires; adaptive leaders; tactical and operational standoff with direct and indirect fires and vertical maneuver; and the ability to conduct joint, combined, interagency operations, and ground maneuver with great precision over both operational and tactical distances. Moreover, Army forces must have the capability to deny sanctuary; dominate all environments; conduct simultaneous or near-simultaneous decisive, shaping, and sustaining operations; and destroy regime-ensuring forces in detail to promote a stable outcome. Finally, Army forces must be prepared for sustained operations against an adversary whose principal aim is to prolong conflict and avoid decision.

Why Change Now?

To meet the challenges of the future operating environment and the wider range of potential threats, the United States will require an agile, world-class Army capable of rapid response and dominance across the entire spectrum of operations in a joint, interagency, and multinational environment.

The United States, due to its unique position as the dominant military power in the world at this point in history, can transform itself—now. To successfully transform, the Army will take prudent risk in the short-term while maintaining its nonnegotiable contract with the American people to fight and win our Nation's wars.

The current Army forces, heavy and light, are the best in the world. There are, however, deficiencies that must be addressed, and the time to do it is now. The Army's superb armored forces are

unequalled in their ability to gain and hold terrain in the most intense, direct fire combat imaginable. Once deployed, they are the decisive element in MTWs. The current heavy forces are challenged, however, in their ability to deploy quickly to all of the places we are asked to go. Once deployed, these forces require a large logistical support base in theater to maintain their combat power, and their mobility may be limited by the infrastructure of the theater. At the other end of the spectrum, the Army's current light forces can rapidly deploy anywhere in the world and strike quickly, but lack sustained survivability, lethality, and tactical mobility once inserted. These magnificent forces, both heavy and light, are thus respectively lacking in some aspects of warfighting capabilities that will become increasingly important in a rapidly changing world. The experiences of U.S. Army forces in operational missions since the end of the Cold War—in Panama, the Gulf, Somalia, Bosnia, and Kosovo—have demonstrated clearly that capability gaps exist and that they limit our ability to respond and act decisively in the wide variety of environments in which our forces have been and are likely to be employed.

The future need is to close these capability gaps by investing in greater lethality, survivability, and deployability across the entire force, thus resulting in overwhelming dominance for full spectrum operations. Our forces must be able to dominate at all levels of operation, ranging from SSCs to MTW. At the same time, the forces must become more deployable and sustainable, sustainable with a smaller logistical presence, and capable of reaching back to in-theater and out-of-theater sources for essential combat support.

The demands of the changing strategic and operational environment, combined with the strengths and

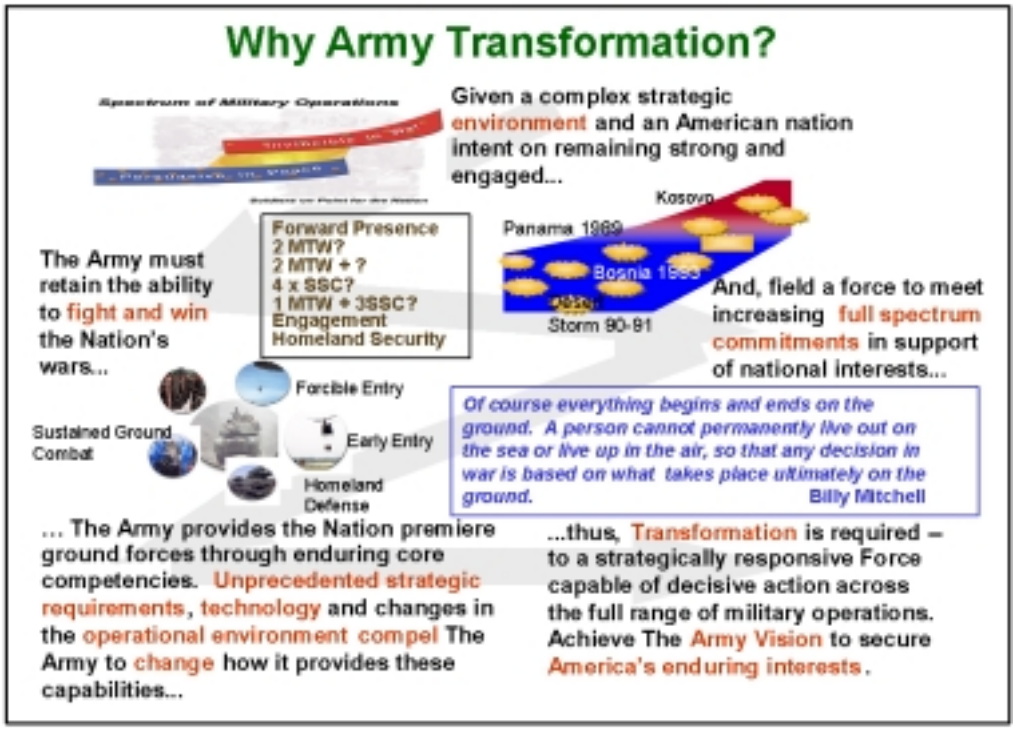

Figure 2. Why Army Transformation?

limitations of today's Army, point to the need for fundamental change. Technological potential for revolutionary advancements is now sufficiently promising to make such substantive change achievable. Recognizing the need to correct existing operational deficiencies, meet the projected requirements of the future strategic environment, and capitalize on the revolution in technology, the Army is the process of transforming itself. (Figure 2)

The Army Vision

Acknowledging the need to change and meet the defense challenges of the future, the Secretary of the Army and the Chief of Staff, Army articulated in October 1999 a clear Army Vision:

> **Soldiers on point for the Nation, transforming the most respected Army in the world into a strategically responsive force that is dominant across the full spectrum of operations.**

This Vision is built upon the solid foundation of hard work that previously has taken place in the Army and will combine it with new initiatives that will take advantage of advanced technologies to meet future requirements of the 21st century. The Vision's goal is to ensure that the Army fulfills its responsibilities to provide dominant landpower forces to meet the requirements of the NSS and NMS. There are three integral components of the Army Vision—**people, readiness, and transformation.**

People remain the centerpiece of the Army, and soldiers—Active, Guard, and Reserve—are its investment in and link to the Nation. The Army is more than just soldiers; it also includes civilians, family members, retirees, and veterans, all serving the Nation in an extended manner. The well being of this entire group is of fundamental importance to the Army and contributes to progress in the other two components of the Vision.

Readiness remains, as it has always been, the Army's top priority. The Army has a nonnegotiable contract with the American people—to fight and win the Nation's wars. Throughout Transformation, the Army will ensure that it can meet the demands of the NMS and the requirements specified in the Joint Strategic Capabilities Plan (JSCP), and support the operational requirements of the Commanders-in-Chief (CINCs), unified combatant commands.

Transformation represents the necessary change in the nature and composition of the force itself. The transformed force that will achieve the Army Vision is an Objective Force that is **responsive, deployable, agile, versatile, lethal, survivable, and sustainable**—all of the required characteristics needed for the future. As an objective measure of force responsiveness, the Army will achieve the capability to deploy a combat-capable brigade anywhere in the world in 96 hours, a combat-capable division anywhere in 120 hours, and five combat-capable divisions anywhere in 30 days.

To implement the Vision, the Army will transform itself as rapidly as possible, maintaining focus on warfighting readiness and taking care of its people. The Army's challenge will be maintaining a trained and ready force capable of decisively executing the NMS and winning the Nation's wars while, at the same time, transforming both the operational and institutional Army that underpins both Transformation and warfighting readiness.

Modernization is fundamentally about maintaining the capabilities we have and obtaining those necessary to assure dominant overmatch or superiority against any potential adversary today and into the future. Our capabilities are embodied in our organizations. This *Modernization Plan* describes the equipping actions supporting the Army's evolution to the Objective Force. In general, the Army's Transformation strategy progresses along the three major paths or vectors depicted in Figure 3—the **Objective Force**, the **Interim Force**, and the **Legacy Force**.

Transformation Paths

Today's Army—the Legacy Force—consists of both heavy and light forces. It employs specialized organizations that focus on excellence at the low and high ends of the operational spectrum. As a result, the Legacy Force is a bifurcated force. It contains strategically agile light forces that can deploy very rapidly, but lack the necessary mobility, lethality, and survivability to oppose the full range of potential enemy capabilities once deployed. Conversely, its heavy forces possess unmatched lethality,

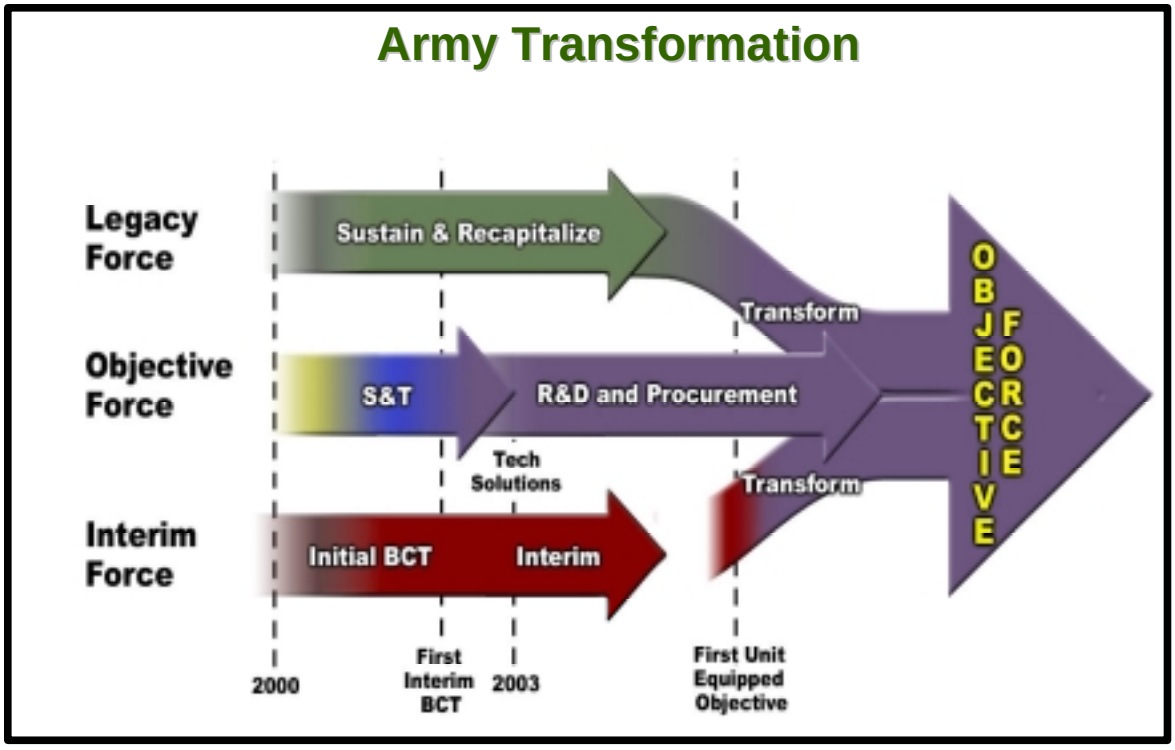

Figure 3. Army Transformation

survivability, tactical mobility, and endurance, but require too much time and too many assets to deploy quickly given current joint capabilities for strategic lift.

Constraints on lift apportioned to ground forces introduce delays in the build-up of a synchronized joint force. These constraints often lead to the initial introduction of ground force packages that lack deterrent credibility because they are unable to immediately conduct multidimensional operations. Prepositioned war stocks reduce strategic lift requirements, but only in the specific regions where those stocks are stored or can be quickly inserted. Consequently, today's limited strategic lift causes U.S. military response to follow a predictably sequential deployment pattern to build sufficient military power to contain, shape, and achieve decision. This reduces the deterrent effect of U.S. forces in regional conflicts. Transformation of the Army into a lighter, more deployable force will partially address these issues, but must be complemented by a comprehensive program to improve joint strategic lift capabilities for both the Legacy Force and the future forces.

Objective Force

The Objective Force will be designed to provide decisive combat power to dominate land operations in future joint contingencies. It will be a strategically responsive, general-purpose force that participates in all phases of the joint campaign, in all environments, weather, and terrain. The force will incorporate revolutionary change embodied in advanced C4ISR capabilities; the Future Combat Systems (FCS); the future reconnaissance, lift, and attack aircraft; and the products of the "revolution in military logistics." Employing these enablers, the Objective Force becomes an offensively oriented, extraordinarily versatile, multidimensional maneuver force capable of executing innovative operational concepts.

Required Capabilities of the Objective Force

In the Army force development process, capabilities are derived from concepts. As a preface to this discussion, it is imperative to note that soldiers and their leaders remain the centerpiece of the Objective Force. The Army builds capabilities and forces around soldiers to fully exploit and sustain the human dimension of warfare, rather than building platforms that are simply enabled by soldiers. Army forces do not fight platforms; they fight soldiers led by capable leaders, organized into effective units, and enabled by advanced capabilities to create overmatching combat power. Consequently, as the capabilities described below are developed, the Army will devote a similar, comprehensive effort to insuring that its soldiers and leaders are trained, educated, and equipped to meet the requirements of future conflict.

Objective Force Characteristics

The degree to which the Objective Force fully embodies the characteristics outlined in the Army Vision—responsive, deployable, agile, versatile, lethal, survivable, and sustainable—will determine to a significant degree the overall capability

of the force to carry out its core operational tasks within the joint campaign.

A **responsive** and **deployable** Objective Force empowers joint commanders with broader options, frustrates enemy timelines, cements the coalition early by its representation of national resolve, and provides the capability to assure the outcome on our timeline and our conditions. Responsiveness and deployability will be achieved in part through lighter formations, reductions in deployment tonnages, improved military and civilian force projection platforms, advanced en route planning/rehearsal tools, and simplification and reduction of reception, staging, onward movement, and integration requirements. Responsiveness is also improved through force design and organizational principles—modularity, force pooling, general-purpose design—that permit the commander to rapidly tailor and deploy the appropriate force for each contingency and to transition to other forms of operations when battlefield conditions change. While we will retain forcible entry capability, improved air and sea lift systems, supplemented by expanded joint over-the-shore capabilities, will mitigate the requirement for forcible entry, enabling the Objective Force to chose the time and place to enter the battlespace, establish lodgment(s), and/or secure airports and seaports.

Effective joint operations place a premium on **agility** and **versatility**. The inherent versatility of the Objective Force provides the joint commander with general-purpose utility and dominance across the entire spectrum of operations. Objective Force agility and versatility will enable seamless transition between benign and hostile environments, within and between operations, including transition from stability and support operations to higher intensity offensive and defensive operations. Conversely, if deployed initially for warfighting, Objective Force units can seamlessly execute lower intensity operations, either simultaneously or subsequently. In short, physical and mental agility supports transition across mission sets and enables the force to dominate all environments, threats, and terrains, enhancing operational flexibility through multifunctional application of the force.

Lethality. Lethality is the sum of actions taken to close with and destroy the enemy. Objective Force units will deliver overmatching combat power with integrated combined arms capability at the lowest levels of the organizational design. Central to this capability is the ability to use decisive fires, maneuver, and assault to assure complete destruction of the enemy. At the tactical level, the close combat zone will expand in size and focus will shift toward fighting and winning beyond-line-of-sight engagements. Lethal units dominate battle through employment of overmatching sensors and firepower capabilities at ranges that exceed those of the enemy. Freedom of maneuver for lethal units is provided through mobile/survivable systems and units.

Survivability. Whether mounted or dismounted, Objective Force soldiers will have absolute confidence in their

ability to defeat any enemy and survive to fight the next battle. Survivability will be achieved holistically through force shielding, i.e., through a system-of-systems approach that integrates physical capabilities for survivability with the manner in which the force is employed. In the past, the Army built systems capable of surviving direct-fire hits. Objective Force survivability, in contrast, includes the effective integration of active and passive means of protection, of combining advanced situational understanding, mutual interaction between platforms and dismounted soldiers, greater stand-off ranges, improved avoidance of detection, hit avoidance, and penetration protection to achieve survivability.

Sustainability. Continuing progress in the "revolution in military logistics" is critical to achieve the Objective Force operational concept. To improve responsiveness, reduce vulnerability, and increase operational momentum, the Objective Force will seek to reduce the current in-theater logistics footprint. The efficiencies required in the Objective Force can be attained primarily by investing in the technologies and enablers that support focused logistics and that will truly revolutionize military logistics. Objective Force units will sustain multiple operations through means of ultra-reliable systems, systems commonality, revolutionary power generation, higher fuel efficiency, and improved system maintainability. Sharply reduced sustainment demands, particularly for water, fuels, and munitions, will reduce throughput and infrastructure requirements. Additionally, C4ISR-enabled split-based operations will further reduce the in-theater footprint. These improvements will produce a more strategically responsive force, which can sustain a higher tempo of operations and seamlessly execute transition between operations and phases of the campaign. As these changes are implemented, however, the Objective Force will retain the infrastructure and capabilities required to sustain and support the joint force in accordance with the Army's mandated joint responsibilities (e.g., Common User Logistics).

Interim Force

The **Interim Force** will fill a current capability gap (Figure 4). To achieve requisite capabilities at the operational and tactical levels, it will be a combined arms force in both design and manner of deployment and employment. It will be organized as a rapidly deployable, full spectrum force, providing the warfighting CINCs with increased options for SSCs, while not compromising readiness for MTWs. Its design also will support rapid integration of multinational and interagency capabilities for peace keeping/peace enforcement and warfighting missions.

The Interim Force will provide a highly capable, strategically responsive combat force that can seize the initiative before an enemy force can attain its initial goals and become set in an operational position that makes it hard to defeat.

Interim Force units will be highly mobile at the strategic, operational, and tactical levels. These units will complement Legacy Force units to

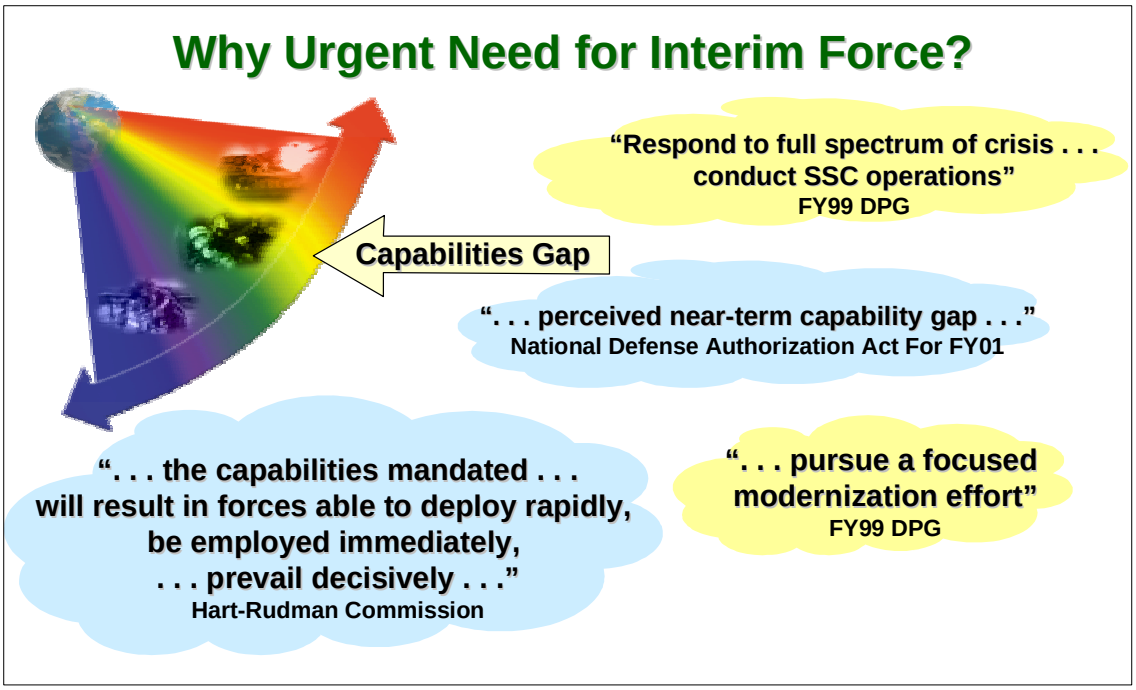

Figure 4. Why Urgent Need for Interim Force?

provide the overall tactical superiority required to meet the full range of future operational requirements. Equipped with a family of IAVs, lightweight artillery, and other available technology, these units are being designed to maximize lethality and survivability while increasing tactical, operational, and strategic maneuver. Lighter than the heavy force and more capable than light units, they will allow us to take greater advantage of available strategic lift. Operationally, they will be transportable in C-130 or equivalent aircraft. The brigade base will be self-contained, fully mobile, and completely air deployable. Its deploying units will be "force forwarded" as combat ready units, designed to arrive operationally capable immediately upon debarking in the area of operations. Although it will not possess all of the capabilities of the Objective Force, the Interim Force will provide the joint and multinational force commander increased operational and tactical flexibility to execute the fast-paced, distributed, noncontiguous operations envisioned in *JV 2020*. Organized with three combined arms infantry battalions and the most robust reconnaissance, surveillance, and target acquisition squadron of any brigade in the Army, the Interim Brigade Combat Team (IBCT) will be equipped with an IAV that will give it greater lethality, survivability, and tactical mobility than existing crisis response formations. Rapid deployability, early autonomous operational effectiveness, and the ability to quickly develop situational understanding are the keys to successful operations. The Interim Force's two core qualities are tactical mobility and decisive close combat capability. Though they will normally be employed within a divisional structure where additional augmentation is available, the Interim Force units will have organic combat, combat support, and combat service

support capabilities that will make them highly self-sufficient, whether employed as IBCTs or as elements of a division.

Interim Brigade Combat Team

The IBCT is a **full spectrum, combat force**. It has utility, confirmed through extensive analysis, in all operational environments against all projected future threats, but it is designed and optimized primarily for employment in SSCs in complex and urban terrain, confronting low-end and mid-range threats that may employ both conventional and asymmetric capabilities. Fully integrated within the Joint Contingency Force, the IBCT deploys very rapidly, executes early entry, and conducts effective combat operations immediately on arrival to prevent, contain, stabilize, or resolve a conflict through shaping and decisive operations. The IBCT participates in MTWs, with augmentation, as a subordinate maneuver component within a division or corps, in a variety of possible roles. The IBCT also participates with appropriate augmentation in stability and support operations (SASO) as an initial entry force and/or as a guarantor to provide security for stability forces by means of its extensive combat capabilities.

The IBCT cannot conduct forced entry, but it provides the joint force commander an improved, early-arriving capability to immediately begin operations to shape the battlespace and execute decisive action to expedite conflict resolution. Once committed, the robust IBCT can sustain operations for up to 180 days without relief. Capable across the full spectrum of conflict and range of operational environments, the IBCT can stabilize crises and set the conditions for early decisive action. In many cases, the IBCT can achieve early decision, and its capabilities will add an additional element of deterrence that might prevent many crises from arising in the first place.

The IBCT organization is expandable through either augmentation or scalability in accordance with the factors of mission, enemy, troops, terrain, time, and civilians (METT-TC) in any given contingency**.** The organization includes the command, control, and communications (C3) "hooks" necessary to permit rapid integration of additional, enabling capabilities, particularly for operations outside the scope of SSCs, such as SASOs and MTWs.

As a prelude to the Interim Force, the Army has initially established a two-brigade force at Fort Lewis to begin fielding the IBCT capability. Once organized, trained, and equipped in accordance with the IBCT Operational and Organizational (O&O) concept, these initial brigades will provide the first operational capability of the Interim Force. Upon fielding of the first IAVs, these units will be designated as IBCTs. Eventually there will be up to eight IBCTs in the Army force structure, at least one of which will be an Army National Guard (ARNG) brigade. By March 2005, we expect to be able to field an Interim Division.

The Interim Division

Studies suggest that IBCTs, although designed for easy integration into light or heavy divisions, are even more

flexible and useful in an Interim Division. Such a structure provides a strategically responsive force capable of initiating earlier decisive operations, coordinating multiple, simultaneous SASO requirements, providing the C4ISR and precision fires that enable precision maneuver and information superiority and functioning as an Army Forces (ARFOR) Headquarters in joint operations. The Army will continue to develop and study command and control structures that make the best use of the Interim Force capability.

Command and Control

The IBCT normally fights under a division but can also fight under the direct control of a corps headquarters within a joint or combined command. A corps will probably act as the ARFOR Headquarters and possibly as the Joint Forces Land Component Command (JFLCC) and/or Joint Task Force Headquarters. In many contingencies, the IBCT will (initially) be the single U.S. maneuver command operating under the ARFOR/JFLCC, although other coalition elements might also be present. In either case, if the employing headquarters is not already in place, it must deploy lead elements of its command, control, and communications (C3) structure in order to establish the C3 framework required for effective initial operations. The IBCT is dependent upon the division and higher echelons of command for reachback linkages to expand its access to information, intelligence, joint effects, force protection, and sustainment. The IBCT's design also enables integrated employment of forces; it is fully complementary to and compatible with U.S. Marine Corps and U.S. Air Force expeditionary units.

Legacy Force

Current Army forces and those capabilities that will be fielded in the near term are referred to as the Army's Legacy Force. They are the finest land combat forces in the world today. Although the operational environment is changing in ways that limit their utility across the full spectrum of requirements, the Legacy Force will continue to be relevant long into Transformation. Its proven capability, despite some needed improvements in deployability and sustainability, is the war-winning basis for simultaneously transforming the Army and meeting America's diverse security requirements. With selected modernization to maintain combat overmatch, recapitalization to improve readiness, and insertion of new, more efficient technologies to reduce operating and sustainment costs, the Legacy Force provides the margin of security that allows us to undertake Transformation.

The Legacy Force was explicitly designed to have a decisive edge over a well-defined, conventional adversary in a mature, well-known theater of operations. The major systems within the force, the "Big Five" of the 1980s—the Abrams tank, the Bradley Infantry Fighting Vehicle, the Apache attack helicopter, the Blackhawk utility helicopter, and the Patriot air defense system—represent a triumph of American arms for that era. That fleet of critical combat systems is reaching or exceeding its expected service life, demanding in turn a fundamental

business decision regarding their retention in light of the new operating environment. We must decide whether to maintain them until they can be replaced, to recapitalize them by rebuilding and/or selectively improving their capabilities, or to divest them from the force and replace them with modernized systems. The confluence of a changing environment and critical points in the life cycles of major combat systems offers both tremendous opportunity and enormous challenges.

Sustaining our current qualitative edge throughout Army Transformation must remain a priority. As we pursue leap-ahead capabilities that enable new ways to fight, we must retain capabilities that assure decisive dominance for both MTWs and SSCs. This reality demands that the Army's resourcing strategy for Transformation maintain a careful balance of old and new systems that sustains readiness for today while preparing for the future. This strategy embodies a capabilities-based approach to new operational and organizational constructs, synchronizes divestiture with acquisition, selectively retains or extends the life of legacy systems, and brings on new systems as rapidly as possible.

All of the Army's major combat systems have benefited from capability upgrades through product improvement more than once. Additional product improvements could continue to improve their overmatching combat capabilities, but the basic structures are fatigued, producing a predictable impact on readiness. Assuring the availability of this aging fleet will require an ever-larger quantity of repair parts and additional logistical infrastructure, making sustainment operations more difficult and expensive. A particular problem relates to Combat Support and Combat Service Support systems, since a majority of these systems exceeds the DoD half-life standard and have not been upgraded. At this point, the requirement is to balance current operational risk and investment in future capabilities by prudent recapitalization through complete rebuild of selected systems and selective capability upgrades. Such a Legacy Force recapitalization program will extend the service lives of essential combat weapons, allow insertion of technological developments to make them more efficient to operate and maintain and selectively upgrade those capabilities that produce required combat overmatch. Recapitalization must be selective and must be based on warfighting needs, probable missions and operating environments of organizations, and readiness of the force. The high cost of a wholesale, across-the-fleet modernization effort would consume resources needed to develop the leap-ahead capabilities of the Objective Force.

The Army's chosen Transformation strategy accepts prudent risk in the Legacy Force, where we will maintain both the capabilities and readiness necessary to carry out our part of the NMS. The Transformation strategy applies to the RC as well as to the AC, to the light forces as well as to the heavy forces. It is fundamentally different from previous concepts of modernization, which gave the newest

equipment to selected high-priority units and assumed that all like forces would eventually have exactly the same equipment and organization. This new strategy focuses on achieving and maintaining the capabilities required to assure dominance in carrying out all tasks but accepting risk in some parts of the force where it is prudent to do so. Specifically, this *Modernization Plan* focuses selective upgrades and modernization on some key organizations while rebuilding and maintaining existing capabilities in others. ARNG and U.S. Army Reserve (USAR) units that are paired with AC units will be selectively modernized, recapitalized, or rebuilt to attain full interoperability and compatibility with their AC teammates.

At the upper end of the risk scale, fighting and winning MTWs requires the ability to mount a decisive joint offensive or counteroffensive campaign. The Army's analysis indicates that, to be decisive, the ground portion of such an effort requires a minimum of five divisions under corps-level joint task force command and control. Significant portions of the Army are forward-deployed in or near particular theaters, where they serve as early-arriving containment forces. Assembling the force required for decisive counteroffensive operations anywhere in the world calls for a three-division corps, with an armored cavalry regiment, designated as the central piece for the counteroffensive effort by the Counterattack Corps that will include the forces that arrived earlier.

To meet this need, the Army will selectively modernize and recapitalize the III Corps headquarters and support structure, the 3rd Armored Cavalry Regiment, and three AC heavy divisions. This includes those echelons above division (EAD) units assigned to III Corps, including RC units. The forward-deployed and early deploying contingency forces, along with the prepositioned equipment sets that support them, will be recapitalized as needed to meet the threat they face. RC forces will maintain capabilities compatible with the units that they support.

The Army's Transformation strategy for the Legacy Force also includes light forces. A major goal of light force recapitalization and modernization is to close the gap that exists in lethality, survivability, and tactical mobility between their capabilities and those of the heavier forces, making them capable of employment in a wider range of situations. Some of these aims are being achieved as light units convert to the Interim Force design. For those forces that will remain light, we will focus on improving their capability for forced entry operations and for operations in urban terrain. Doing so requires improving their situational awareness and lethality while reducing the weight that they carry and solving the problem of power sources that do not overburden the soldier or the logistical system.

This strategy will sustain the essential capabilities of the Army during transition to the Objective Force, underwriting national security requirements and positioning the Army to fully transform when capability comparable to that of the Legacy Force is resident in the Objective Force. The

Legacy Force—including Active, Guard and Reserve forces—will begin progressive transition to the Objective Force structure beginning in approximately 2008. For the immediate future and well into the midterm, the Legacy Force, along with the Interim Force as it is fielded, will be the force of choice by which the Army fulfills its readiness responsibilities to the Nation.

Transformation Timeline

Transforming the Army will be a lengthy process, with the exact timing depending on technology readiness, funding levels, and unit availability. The Transformation Timeline provides additional information (Figure 5).

Initial and Interim Capability Phases. The Initial Phase has already begun. The major objective of this phase is the reorganization and fielding of two initial brigades at Fort Lewis during FY00-02. Concurrently, the Army will be investing in the Objective Force through increased S&T funding. The goal of this S&T investment is to accelerate the scientific process and enhance the quality and the quantity of the technological solutions to achieve the force characteristics and operational capabilities of the Objective Force. The Interim Capability Phase focuses on complete fielding of the Interim Force, composed of six to eight IBCTs, including at least one ARNG brigade. This phase begins with the fielding of the first battalion with the IAV and ends when the last IBCT is fully manned, equipped, and trained to possess the capabilities described in the IBCT O&O. The Interim Force will bridge the gap between today's capabilities and the Objective Force.

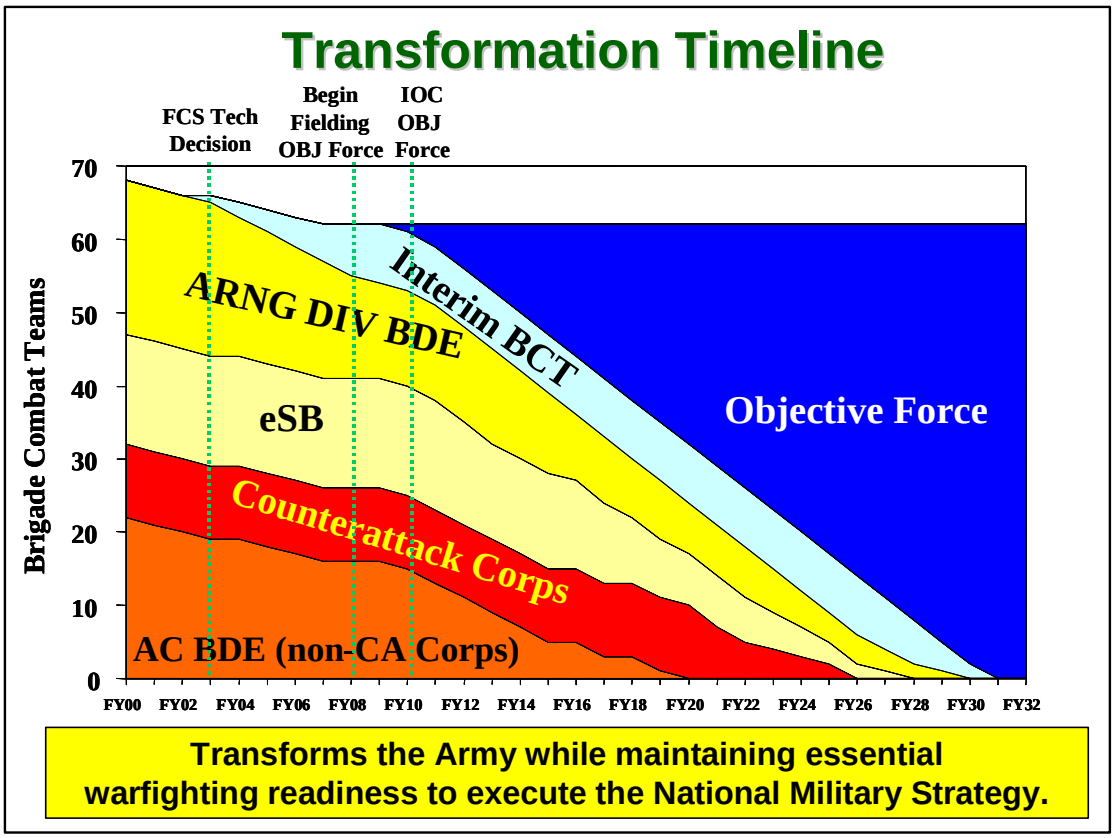

Figure 5. Transformation Timeline

As such, it will be a full spectrum capable force and will eventually extend beyond brigade echelon, to include Interim Division capabilities. Additionally, selected recapitalization and upgrade of necessary Legacy Force units and systems preserves required near-term capabilities.

Objective Capability Phase. This phase of Army Transformation will begin when the first Objective Force brigade-sized unit is fully manned, equipped and trained to achieve the capabilities as described in the Objective Force O&O. It will end when the Army is totally converted to the Objective Force capability.

The Joint Framework

The factors that drive change in the Army have a similar impact across the entire U.S. armed forces. Consequently, all the Services and the joint community are earnestly investigating the requirements of future battle. An in-depth understanding of the future joint framework is critical to derive the core operational concepts and capabilities for the Objective Force. That understanding begins with *JV 2020,* which is intended to guide joint and Service efforts to prepare for future conflict.

The Army Vision and Transformation are fully nested within the stated goal of *JV 2020*, " . . . the creation of a force that is dominant across the full spectrum of military operations—persuasive in peace, decisive in war, preeminent in any form of conflict." The Joint Vision recognizes that to be faster, more lethal, and more precise than today, we must continue to invest in and develop new military capabilities. *JV 2020* identifies four core operational concepts: Dominant Maneuver, Precision Engagement, Focused Logistics, and Full-Dimensional Protection; and two universal enablers, Information Superiority and innovation via advanced technologies, as a macro framework for the identification of required capabilities and the conduct of future joint operations (Figure 6).

Army forces are often associated primarily with Dominant Maneuver. In actuality, Army capabilities are essential to achieving all of the concepts and associated capabilities defined within the *JV 2020*. The Army's consistent call over the past several years for increasing interdependence within the future joint force reinforces the idea that no single Service has a monopoly on any part of *JV 2020* nor on the conduct of future joint campaigns. Leap-ahead improvements in Army force capabilities to achieve the Objective Force will help assure realization of the *JV 2020*—a conclusion strongly supported by recent Army and Air Force futures wargames employing Objective Force-like ground forces. In fact, without modernized ground force capabilities, significant elements of the future joint concepts embodied within *JV 2020* will be underrealized or left out of reach.

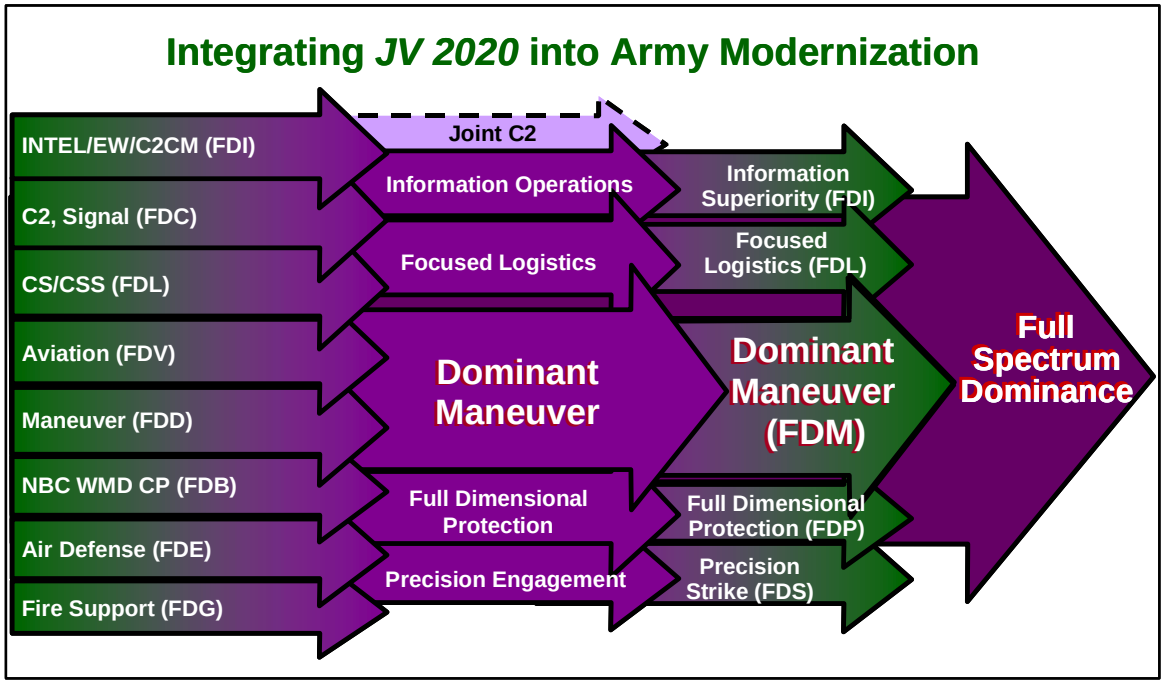

Figure 6. Integrating *JV 2020* into Army Modernization

In addition to the imperative for the Army to field combat capabilities to implement *JV 2020*, it likewise remains essential that Army forces emphasize interoperability with allies and partners in future combined contingencies.

Related to this critical need for interoperability, the Army also embraces the goal of joint development of systems in conjunction with other Services, especially the U.S. Marine Corps.

Modernization is a continuous process of integrating new doctrine, training, organizations, and equipment to develop and field warfighting capabilities for the Army in its ongoing mission to fulfill its responsibilities to the Nation in executing the NMS and all assigned missions. Modernization activities are facilitated and optimized by sound Modernization and Investment Strategies designed to implement the Army's Transformation efforts. The Modernization and Investment Strategies establish common terms of reference for modernization activities and provide necessary focus for equipment expenditures.

The overall Army Modernization Strategy is directly focused to support Transformation to ensure that essential capabilities are developed for the future. At the same time, it provides the greatest capability possible for the current force, which remains the foundation of the Army's readiness to fulfill its enduring and nonnegotiable contract with the American people—to fight and win the Nation's wars.

The Investment Strategy in support of modernization describes the process used in deciding how to spend monies to ensure we obtain the best capability for each dollar spent.

Modernization Strategy

To support the goal of transforming the Army into a more responsive and dominant force in the future, the Army's Modernization Strategy begins by focusing on the three paths or vectors of Army Transformation—the Legacy Force, the Interim Force, and the Objective Force.

Equipping each force is supported by programs in the following categories—modernization, recapitalization, and maintenance. In the longer term, equipping will also result from investments in S&T, which will explore the realm of the possible for future systems. The Army will ultimately have a common organizational design for all components—AC, ARNG, and USAR—built around a new generation of systems that are deployable on C-130-like aircraft. The desired end state is a more strategically responsive Army that is more capable of dominance along the full spectrum of military operations in a joint and combined environment.

As part of the Army's program analysis and to assist in establishing the funding rationale for systems, the Modernization Strategy seeks to determine if a system is part of the Legacy, Interim or Objective Force or a combination of these forces. The Modernization Strategy, as well the supporting Investment Strategy, is always focused on building combat-capable units. Two important processes—Unit Set Fielding (USF) and Total Package Fielding (TPF)—make building combat-capable units a reality, and they are described below as critical components of the Modernization Strategy.

Modernization Tenets

The three broad components of the Army's Modernization Strategy are:

I. **Focus science and technology to enable timely fielding of the *Objective Force* and, in particular, the Future Combat Systems (FCS), which will be the foundation of that force.**

II. **Transform to meet immediate warfighting requirements (Interim Force).**

III. **Maintain and improve warfighting capabilities of the *Legacy Force* through selected modernization, recapitalization, and digitization, thus ensuring preservation of superiority or combat overmatch at all likely levels of conflict.**

Modernization Categories

Modernization programs are placed into three basic categories and are then subcategorized based upon the force they are fielded to support. These modernization categories are:

Modernization—the development and/or procurement of new systems with improved warfighting capabilities (such as the Comanche helicopter, the IAV, the Crusader field artillery system, the Family of Medium Tactical Vehicles, the Javelin antitank system, the Tactical Unmanned Aerial Vehicle, and other new items being procured to meet existing and future requirements).

Recapitalization—the rebuild and selected upgrade of currently fielded systems to ensure operational readiness and a zero-time/zero-mile system.

Within recapitalization, there are two subcategories:

1. **Rebuild**—referring to a process that restores a system to a like-new condition in appearance, performance, and life expectancy and that inserts new technology to improve reliability and maintainability.

2. **Selected Upgrade**—referring to the rebuild of a system and the **addition of warfighting capability** improvements to address capability shortcomings (such as the M1A2 Abrams, the M2A3 Bradley Fighting Vehicle, the Patriot air defense missile system, the AH-64D Longbow Apache helicopter, the CH-47F improved cargo helicopter, the UH-60L+ helicopter, and other items due to undergo qualitative upgrades—often results in change in model number).

Maintain—repair or replacement of end items, parts, assemblies, and subassemblies that wear or break.

Modernization Processes

There are two important processes that are integral to the execution of the *Army Modernization Plan*. These processes are **Total Package Fielding** and **Unit Set Fielding**. They are also aided by a **Balanced Modernization** approach, which attempts to

synchronize fieldings in the most effective manner.

Total Package Fielding (TPF) forms the foundation of successful Unit Set Fielding (USF) and is the Army's process to effect a total system fielding of new and modified equipment. It provides for the concurrent fielding of a single system and all its required support. The process aims at minimizing the logistics burden on the gaining unit.

Unit Set Fielding is TPF by unit sets. It refers to both a strategy and process that modernizes the force through a family of systems approach to fielding. It involves the assembly and issuance of several individual, interactive systems as a set to a particular unit within a specified time period. (Previously, the term "Brigade Set Fielding" was used in this context, but the terminology has been replaced by "Unit Set Fielding" to be more inclusive of all units involved in this process.) **USF, therefore, focuses on fielding enhanced capability instead of individual systems.** This approach requires the synchronization of individual system fielding plans into a single unit fielding schedule that matches system interdependencies, deconflicts demands on soldiers, and ensures operational requirements remain the top priority. The goal of USF is to produce combat-capable units with greater capabilities in the shortest period of time with minimum risk to operational availability. USF is not practical for all units and Components in brigade sets. Particularly for CS/CSS units—primarily those in the RC—USF may be executed by battalion, separate company or team/detachment-sized elements.

Balanced Modernization

Balanced Modernization is the approach of synchronizing fieldings to ensure maximum optimization of both complementary and dependent system capabilities. Balanced Modernization works both within and across the Army's functional systems and within the framework established by *JV 2020*. Although it is focused on the timely fielding of systems designed to interoperate with one another, it also encompasses the concept of force integration by synchronizing a total Doctrine, Training, Leader Development, Organization, Materiel, Soldier (DTLOMS) solution with required infrastructure changes and funding to ensure the proper fielding of a new capability. Of particular importance is the development of training aids, devices, simulators and simulations (TADSS) along with the allocation of required training funds to maximize the Army's utilization of new system capabilities.

A balanced approach ensures that the most effective capability is achieved through the efficient investment of resources. The Army may enhance its capability by fielding a fewer number of systems if it includes all enablers including training devices, ammunition, ranges, spare parts, and personnel. An M1A2 System Enhancement Program (SEP)-equipped armor battalion may achieve less than 100% of its potential capability if all the enablers are not available. The Army may be better off investing some of the end item procurement resources into the

enablers and field fewer tanks, yet achieve more capability. The balanced Modernization Strategy (Figure 7) also serves as the core component of the Investment Strategy and assists in determining the appropriate level and allocation of investments across the modernization categories.

Investment Strategy

The **ultimate purpose and goal of Army modernization is to build and maintain multifunctional, combat-capable units** using a USF process. The nature of the planning, programming, and budgeting system requires that combat unit components (people, equipment, etc.) be managed as single entities. It is the whole unit, however, that remains our focus. The objective is to achieve an operational capability that satisfies mission needs. The challenge inherent in building combat-capable units through the application of integrated components (such as weapons platforms, communications equipment, and ammunition) and the necessary associated functions (leader training, training devices, and installation support) is the achievement of synergism and complementary results in the units.

Fielding even one new weapon system is a complex and multifaceted task. In addition to the actual new or modernized systems, fielding involves the delivery of personnel, training, support systems, associated doctrine, manuals, and training aid. The old way of doing business, managing individual systems through "stovepipes," has evolved toward a systems-to-unit or family-of-systems approach. Other Services have long recognized the importance of defining the capability of their force by enhancing complete units. The Army also has recognized the significance of coordinating the capability improvements of its units.

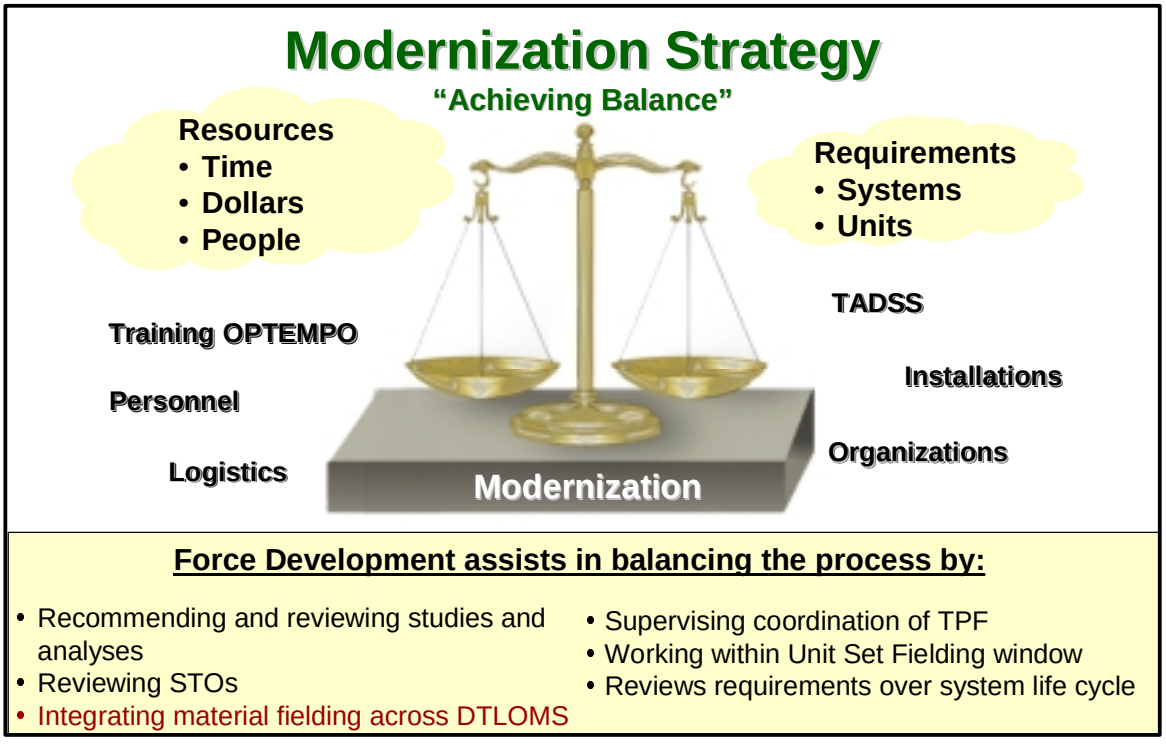

Figure 7. Modernization Strategy

To implement the Modernization Strategy in support of Transformation, the Army prioritizes its investment of limited resources over time. The number one priority for Army investments is the development of the FCS, the foundation of the future transformed Army. At this point, that investment takes the form of S&T efforts to explore, identify, and develop the revolutionary technologies needed to make the FCS a reality. Of the Army's total S&T funding, 96% directly supports programs needed to develop Objective Force technologies, and 37% of this amount specifically supports FCS. Within the Army's RDA expenditures during the planning years FY02-07, which are the basis for financing overall modernization, approximately 62% of the total funding is also dedicated in support of the Objective Force and systems that will be a part of the Army of the future.

To enable this focus on the future, the Army is investing in the modernization of the current Legacy Force and the fielding of the smaller Interim Force to the amount necessary to preserve sufficient readiness and warfighting capabilities until new Objective Force systems can be fielded, which is expected to begin in approximately 2008 (Figure 8). The transition to the Objective Force is expected to be a continual process lasting up to twenty years. The Army has already begun this process by shifting its investment priority to focus on leap-ahead technologies needed for the Army of the future. It remains essential, however, to invest adequate funding in the readiness and capability of the forces that will be available in the immediate future to support the NMS and associated military operations. This investment will be limited to that which is necessary to maintain critical capabilities and, as the Objective Force begins fielding, these investments will be minimized even further and older equipment allowed to age until eliminated from the force. Overall, the Army's plan to transform itself into a more responsive,

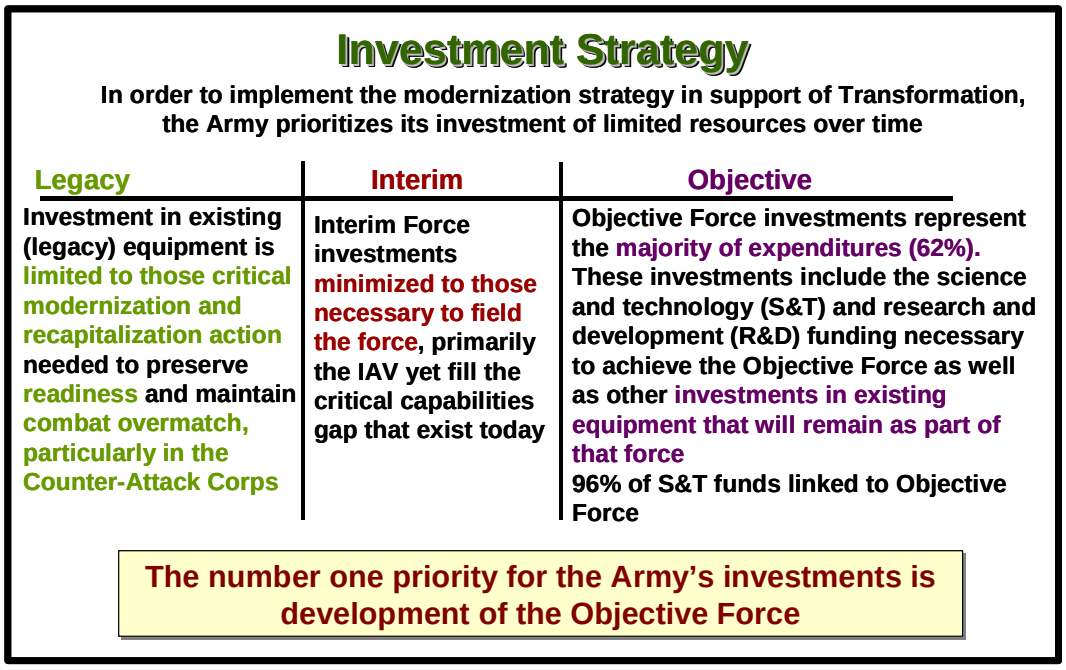

Figure 8. Investment Strategy

deployable, agile, versatile, lethal, survivable, self-sustaining and dominant force for all future military operations is supported by the revised Modernization and Investment Strategies that focus on future potential while still preserving current warfighting readiness.

To support the ongoing and future Transformation, the Army has already made significant changes in its plans and resourcing. Approximately $16 billion of programmed future spending has been shifted to directly support Transformation initiatives. As mentioned above, the vast majority of S&T spending (96%) is devoted exclusively to developing the new technologies of the future Army, with the greatest part of that being for the FCS, the basic foundation of the Objective Force. The requirements for adequately funding the necessary transitional phase of fielding interim combat brigades as well as continuing to maintain, recapitalize, and modernize the existing Legacy Force stretch available resources. Maintaining sufficient readiness of the existing force while focusing on transforming to a new Army to meet future needs requires a more robust, steady funding stream. Proceeding without this funding involves either the assumption of greater risk in the readiness of the Army to meet current requirements, or costly delay in the transformation to a more responsive and dominant Army of the future.

The Army fully recognizes that it operates within a resource-constrained environment and realizes it must first look inward to fund Transformation. In the FY00 and FY01 budgets (Figure 9), the Army cancelled seven programs (Command and Control Vehicle (C2V), Wolverine, Prophet Heliborne, Grizzly, Stinger Blk II, MLRS Smart Tactical Rocket (MSTAR), and Army Tactical Missile System (ATACMS) Brilliant

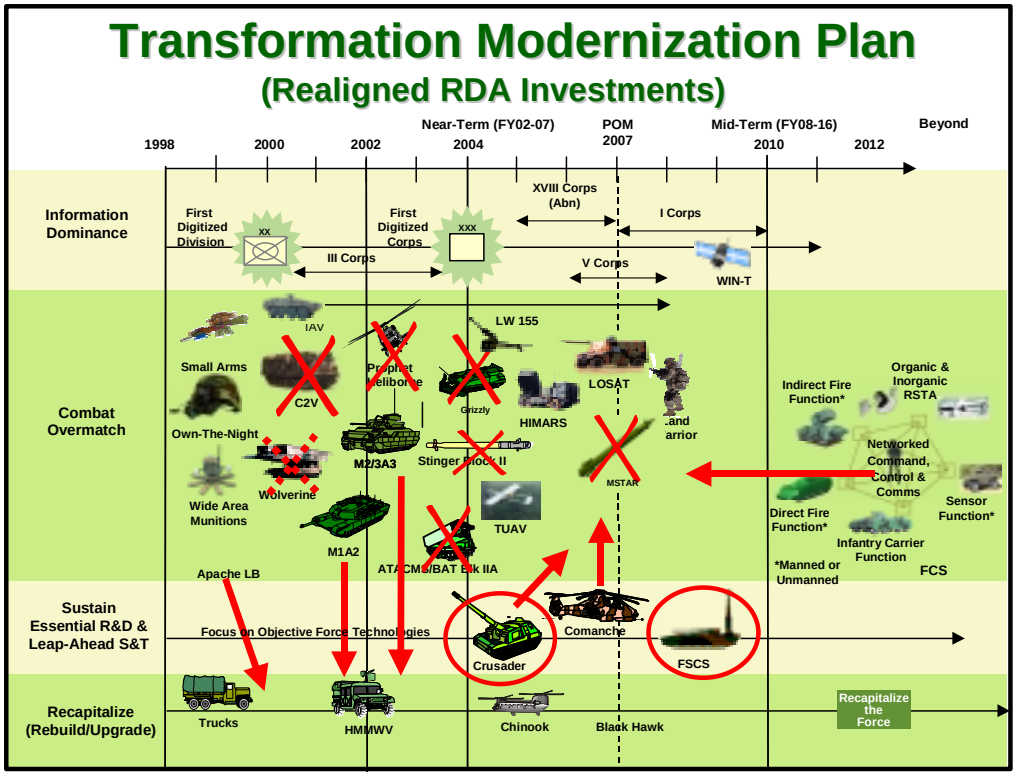

Figure 9. Realigned RDA

Anti-Tank (BAT) Blk IIA) and restructured two others (Future Scout Cavalry System (FSCS) and Crusader), thus sacrificing needed capabilities. In the PB02, the Army has continued making hard choices to fund Transformation by canceling or restructuring five additional programs. Overall, the new Army Investment Strategy represents a paradigm shift from weighting efforts to resource existing systems and technologies to resourcing systems and technologies that will support the transformed Army in the coming decades.

Objective Force

Within the overall Investment Strategy, the critical path of the Transformation leads to the Objective Force. Today, the S&T community is working hard to develop answers to questions we have asked: How do we reduce armor volume in combat vehicles while increasing survivability? How do we increase deployability without sacrificing survivability and lethality? How do we reduce the logistics footprint in the battlespace and thereby reduce strategic lift requirements, and how do we reduce the total cost of logistics without jeopardizing combat capability? These and other questions guide a major S&T effort to develop technologies that will give the Objective Force its desired characteristics of responsiveness, agility, versatility, deployability, lethality, survivability, and sustainability.

Our challenge to the S&T community is to return with a comprehensive set of technological recommendations and R&D plans by 2003. On that basis, the Army will make technological readiness decisions that we believe will lead to several additional years of engineering and development before the new technologies are produced. When the technologies are mature and when the production lines are ready, we will field the Objective Force in unit sets. Organizations will field complete suites of new, thoroughly integrated systems that achieve the capabilities outlined in the Army Vision.

Transformation to the Objective Force will eventually encompass the entire Army. The Legacy Force begins transforming to the Objective Force, followed by the Interim Force. Over the course of ten to twenty years, the Army will completely transform itself into the Objective Force. The culminating phase of this effort is the achievement of Objective Force capabilities. Comanche and a family of FCS will enhance these force characteristics. The FCS is envisioned as a digitized system-of-systems land combat capability with multimission functionality. PB02 funds the required S&T investment and engineering and manufacturing development (EMD) that will permit production of the FCS. Simultaneous with FCS development, the Army will mature other essential Objective Force technologies for full spectrum operations. These include key survivability technologies such as action protection, signature management, and advanced armor. In addition, survivability is closely linked to lethality, which is being actively pursued in the development of precision-guided munitions, directed energy weapons, and electromagnetic multi-role munitions capabilities. This process also requires advances in fuel-efficient propulsion (ground vehicles

and rotorcraft), compact electric power generation, advanced simulation, and medical and soldier system technologies. The Army will seek paradigm shifts in warfighting capabilities as significant as past shifts in tank and helicopter technologies.

The **capabilities for the Objective Force** considered necessary in the projected operational environment are:

- Improved operational force autonomy, with reductions in demand for fuel, spare parts, and munitions.
- Increased responsiveness, accuracy and lethality of supporting lethal and nonlethal fires for a full range of fire support missions.
- Improved networked C4ISR links between sensors and shooters for all weapon systems and platforms.
- Improved sensors to see the full range of operational variables—terrain, weather, friendly and enemy force, noncombatants—and detect threat actions in all weather conditions.
- Unmanned air and ground systems as reconnaissance/surveillance, attack systems, and other battlefield functions.
- Current or enhanced level of survivability.
- More strategically deployable force capable of fighting upon arrival.
- Improved early warning and intercept of enemy ground- and air-launched conventional and smart weapons—missiles, rockets, cannon, and smart munitions.
- Improved warning of chemical and biological hazards for avoidance and identification.
- Improved non-line-of-sight (NLOS) communications for use in restricted, urban, or complex terrain.
- Improved information protection for C4ISR networks.

To obtain the Objective Force as rapidly as possible, the Army will maximize use of the Simulation and Modeling for Acquisition, Requirements and Training (SMART) initiative. SMART capitalizes on modeling and simulation (M&S) tools and technologies to address system development, operational readiness, and life-cycle cost and is accomplished through the collaborative efforts of the requirements, training and operations, and acquisition communities. SMART is a framework to provide a disciplined, collaborative environment to reduce costs and time required to provide solutions to Army needs. Key components are the ability to exchange data, algorithms, software, and other information. SMART yields four significant benefits that are of paramount importance to Army Transformation:

1. Reduced total ownership costs and sustainment burden for fielded systems throughout their service live.

2. Reduced time to explore concepts and develop and field new or upgraded systems.

3. Increased military worth of fielded systems while simultaneously optimizing force structure, doctrine,

tactics, techniques, and procedures.

4. Concurrent fielding of systems with their training devices.

Science and Technology (S&T)

Focused and sustained investments in RDA are essential for and inseparable from enhancing force capability and strategic responsiveness. To maintain the technological superiority of our current forces and align near-term S&T programs that maximize required interim capabilities, the Army long-term S&T programs focus on revolutionary technologies designed to deliver materiel and equipment during the later stages of the Transformation process. For example, near-term development of robotics technology involves use of leader-follower sets (manned-unmanned) to decrease vehicle manning and size-weight requirements. Long-term S&T will provide autonomous robotic vehicles capable of such functions as reconnaissance and surveillance missions and fires and effects missions in extreme, dynamic, or hostile environments.

The S&T strategic goal is to help the Army eliminate, as much as possible, the current distinctions between heavy and light forces and achieve a single Objective Force.

To accomplish this goal, the S&T program will:

- Develop technologies and prototype systems for FCS and other Objective Force systems.
- Pursue innovations to achieve leap-ahead capabilities.
- Identify and leverage the best sources of technology for the Army.

Objective Force Technology Areas

Although FCS is the main thrust of the S&T program, it represents only about one-third of all S&T funding. Most of the Army S&T program is focused on pursuing technologies that support the Objective Force as a whole. The Objective Force technology areas are described as follows:

- **Future Combat Systems.** FCS is a combat team-of-teams and system-of-systems involving mounted and dismounted teams, manned and unmanned systems, and air and ground components, all linked within a network of C4ISR and fires. It is capable of closing with and destroying the enemy by fires, maneuver, and assault, and is also capable of seizing and controlling terrain.
- **C4ISR**. Research and technology to enable comprehensive situational awareness for the Objective Force. This includes advanced sensors and sensor processing, intelligence and electronic warfare systems and techniques, militarized and special-purpose electronics, countermine technologies, and C4 system technologies.
- **Basic Research**. Investments in the exploration of fundamental phenomena that have significant potential to enhance future land warfare capabilities in areas such as armor materials by design, nanoscience, biomimetics, compact power, smart structures, miniature and multifunctional sensors, and soldier performance.

- **Medical**. Research and technology to protect and treat warfighters to ensure worldwide deployability, increase warfighter availability, and reduce casualties and loss of life.
- **Lethality**. Technologies are needed to provide FCS tactical and operational ranges of lethal and nonlethal effects delivered by organic FCS means against line-of-sight (LOS), beyond-LOS (BLOS), and NLOS targets. Technologies are needed to provide FCS with a common weapon, significantly reducing the ammunition logistics burden while paradoxically providing for a high volume of fires at sustained rates with long gun-life and manned by smaller crews. FCS requires both high- and low-velocity fires and precision-point munitions, but also precision-in-area munitions, delayed munitions, smart and brilliant munitions for use within highly restrictive Rules of Engagement (ROE) environments. Technology must provide overmatching lethal capabilities to destroy heavy and light armor, bunkers, personnel, and air threats such as Unmanned Aerial Vehicles (UAVs) and rotary-winged aircraft, as well as provide for obscuration, proactive counterfire, command and control (C2) disruptions, and creation of obstacles.
- **Rotorcraft**. Research and technology to enhance the performance and effectiveness of future rotorcraft, including rotors and structures, propulsion and drive systems, avionics and weapons and human-systems integration (e.g., crew station) technologies.
- **Future Warrior**. Technologies to support the future infantry soldier, including enhanced ballistic protection, clothing and equipment, dismounted warrior C4, compact power and power management, sustenance and nutritional enhancements, soldier weapons, and warrior technology integration.
- **Focused Logistics**. Technologies to enhance deployability and reduce logistics demand. Examples include precision roll-on/roll-off air delivery, technologies for airfields and pavements to support force projection, 21st century truck, and robotics to support resupply and reduce demand for food, fuel, and water.
- **Personnel Technologies**. Advanced training tools and methods to enhance warfighter and commander abilities and performance; advanced human engineering concepts to ensure human-system physical compatibility and cognitive engineering concepts to avoid information overload and optimize task allocation to enhance warfighting effectiveness.
- **Survivability**. Technologies that in the aggregate, along with organizational designs and doctrine, provide survivability of mission capability, organizations, platforms, and individual soldiers. Included within this category are technologies permitting the FCS-based Objective Force to first see, first decide, and first shoot, thereby eliminating threats to force survivability. Also included are technologies that enable organizations, platforms, and

soldiers to avoid detection, acquisition, hit, penetration, and kill.

- **Advanced Simulation**. Simulation tools to provide increasingly realistic environments and systems to support acquisition, requirements, and training. This includes technologies for networked simulations, embedded training, constructive simulations, virtual environments, and range systems for live use.

FCS Concept

Developing the FCS is the Army S&T community's unconditional highest priority. The FCS represents the central materiel solution to achieving the Objective Force capabilities. The intent is to develop and field a generation of combat systems that will blur current distinctions between heavy and light forces. It will solve the challenges of making heavy forces lighter, making, lighter forces more lethal, and reducing logistics demands.

The FCS is not "a" system. Rather, it is a system-of-systems that collectively exceeds the capability of any of its components. The Army is not developing "a" tank or "an" artillery system or "an" infantry center. It is developing new concepts and designs to challenge these traditional platform-centric approaches. Achieving this goal will enable a true paradigm shift—as significant perhaps as the development of the tank and the helicopter themselves.

The FCS systems approach envisions a grouping of capabilities into five major functional areas (1) direct fire, (2) indirect fire, (3) infantry assault, (4) intelligence and reconnaissance, and (5) networked connectivity with overmatching synergy of functions.

The primary design characteristics of the FCS include networked C2 on-the-move, BLOS "direct fires," advanced long-range precision indirect fires, standoff sensors, and robotics. In addition to the technical challenges within these functional areas, there is a total system design constraint for weight that is approximately 20 tons maximum per vehicle, and for volume—that of the current C-130. This is a very stringent but realistic measure of performance. The C-130-like transportability constraint for the FCS is the prime system characteristic to achieve the increase in strategic responsiveness stated in the Army Vision.

The Army, Defense Advanced Research Projects Agency (DARPA), and others will be developing a number of enabling technologies for FCS. In the case of the Army, these technologies will be transitioned either through planned Advanced Technology Demonstrations (ATDs) to the baseline FCS program, or as a future FCS preplanned product Improvement (P3I). These technologies fall into the major areas described below:

- **Lethality**. Concepts include lethal and nonlethal LOS and BLOS gun, missile, and directed energy technologies that will allow the instantaneous prioritization, distribution, engagement, and destruction or neutralization of multiple targets. Representative programs include Compact Kinetic Energy Missile, Multirole Armament and Ammunition ATD, Direct-Fire Lethality ATD, and Modernized Hellfire/Common Missile.

- **Army/DARPA Collaboration**. These investments represent the Army's contribution to the memorandum of agreement (MOA) between the Army and DARPA to collaboratively develop the FCS. The MOA was established in February 2000. The Army/DARPA FCS MOA outlines an S&T program leading to seamless transition of an FCS design and prototype demonstrator to system development and demonstration (SDD) in FY06. The SDD transition milestone is an integrated demonstration to assess FCS ability to achieve the FCS O&O concept and mission needs. Key to the program's success is the simultaneous development of the operational concepts, requirements, and critical enabling technologies for achieving FCS combat overmatch capabilities.
- **Survivability**. Survivability is the primary technology challenge for a C-130 transportable ground combat system. To survive a first-round engagement, individual FCS platforms will require new approaches to hit avoidance and crew protection. Overall force survivability will require unprecedented battlespace situational understanding and standoff neutralization capability. Representative programs include Full Spectrum Active Protection, Lightweight Armor, Signature Management Technology, and Vehicle-Mounted Mine Detection.
- **C4ISR**. Concepts include on-the-move distributed C2; multifunction sensors and sensor fusion algorithms; and development of a seamless Tactical Internet within and between units, leaders, soldiers, platforms, and sensors. Representative programs include Future Scout and Cavalry System ATD, Agile Commander ATD, Multifunctional On-the-Move Secure Adaptive Integrated Communications (MOSAIC) ATD, Tactical C2 Protect ATD, and Integrated Situational Awareness and Targeting ATD.
- **Mobility**. Concepts include electric drives, pulsed power generation, hybrid propulsion, fuel cells, low-power demand electronics, and efficient power management. Representative programs include Combat Hybrid Power System (CHPS) and Ground Propulsion and Mobility.
- **Function Integration**. This investment provides for the integration of Army-developed technologies into the DARPA-led FCS demonstrator.
- **Robotics**. Unmanned vehicles must be employed to significantly enhance the effectiveness of manned systems. UAVs will increase the ability of forces to see before being seen. Unmanned ground vehicles (UGVs) will provide a significant component of the FCS ensemble and will reduce the risk to soldiers, alleviate personnel requirements for selected support functions, and increase strategic and tactical mobility through reductions in weight and size. Representative programs include the Robotic Follower ATD, Semiautonomous Robotics for FCS, and Demo III.

- **Human Engineering**. Concepts include human-machine interface designs that decrease task complexity and execution times, improve performance levels, and minimize physical, cognitive, an sensory demands; associate systems to offload human operators and enable maximum focus or the highest priority tasks; and embedded/deployable virtual training and mission rehearsal environments. Representative programs include Crew Integration and Automation Testbed, and Intravehicle Electronics Suite.

FCS Program

FCS concept development is underway. Both DARPA and the Army have explored options for meeting the stated program requirements. These studies have indicated that, with the development of a network-centric, distributed combat capability, it will be possible to provide a fighting force that is more lethal, survivable, mobile, and supportable than either our current heavy force or light force.

The FCS concepts, technologies, and system designs will continue until 2003. All three are being conducted in parallel. The Army and DARPA are jointly funding the concepts and systems design work, as well as the higher risk, high-payoff enabling technologies. Additional FCS-enabling technologies are being developed independently by the Army, industry, and others.

2003 is a critical decision year. Using program results to date, Army leadership will decide if the FCS system-of-systems designs and their associated technologies as demonstrated will fulfill the Army Vision. If so, the program will continue by finalizing the approved FCS designs, bringing the required technologies to the prototype demonstration level, and building and testing an FCS demonstrator. The demonstrator will be capable of performing all desired FCS functionalities described in the FCS mission needs statement. The demonstrator will be completed and tested in 2006.

Other S&T

A small portion of the S&T program is devoted to several programs that do not directly support the Objective Force:

- **Environmental Quality**. Tools and techniques to enhance "green" operations through improved pollution prevention, restoration of contaminated areas, enhanced compliance with environmental statutes and regulations, and effective conservation of resources.
- **Engineering Construction**. Research and technology to achieve critically needed cost reductions in Army facility life-cycle processes (infrastructure planning, assessment, design, construction, revitalization, sustainment, and disposal) to improve soldier readiness, safety, and quality of life.
- **Dual-Use S&T**. Co-investment with industry in technologies with both military and commercial applicability, thereby reducing development costs and potentially reducing production costs through shared production lines.

- **Materials Processing**. Widely applicable, novel techniques for materials processing and production.

FY02 President's Budget. To support the Army Vision and accelerate the pace of Transformation to the Objective Force, the Army has increased its S&T funding. PB02 increased funding for S&T by $197 million. While the Army's FY01 budget adequately funded the necessary S&T to meet our initial Transformation goals, the Army does have more S&T opportunities than we have resources. An additional $300 million would support funding to expand and accelerate the following technologies: (1) robotics systems ($100 million), (2) concept definition, modeling and simulation for FCS ($50 million), (3) untethered options for BLOS precision munitions ($50 million), (4) kinetic energy missile weapons systems ($50 million), and (5) electrothermal chemical cannons ($50 million). S&T funding totals $8.5 billion in the FY02-07 Plan, of which $8.2 billion directly supports programs needed to develop Objective Force technologies. Approximately 37% of the Objective Force investment ($3.0 billion) supports FCS, the cornerstone of the Objective Force.

Interim Force

Over the past decade, the Army has significantly improved the ability to deploy heavy forces to two MTWs through forward stationing of soldiers and prepositioned equipment. That approach is no longer sufficient, and the Army must make fundamental changes that enable deployments to locations other than these theaters and for operations of a much wider scope. The deployability of current legacy combat platforms can only be marginally improved. Therefore, the Army will rely upon a combination of enhanced prepositioned equipment and a transformed force to lighten and organize the Army for maximum deployability. A key objective of the transforming Army is to achieve more strategic responsiveness, as it will be structured and equipped for timely, worldwide employment to maximize our deterrent effect and diminish the challengers' opportunity to attain strategic or tactical advantage.

To achieve a very rapid deployment threshold, the IBCT design capitalizes on the widespread use of common vehicular platforms coupled with the minimization of personnel and logistical footprint in theater. With approximately 3,500 personnel and configured ready-to-fight combined arms packages, the entire brigade can complete deployment within 96 hours. It can begin operations immediately upon departure from the airport of debarkation (APOD). It also provides the Joint Force Commander an improved capability to arrive immediately behind forced entry forces, begin shaping operations, and expedite decisions. Operationally, the IBCT normally fights under a division or corps headquarters acting as the ARFOR or JFLCC, within a joint or combined force.

The core operational capabilities of the IBCT depend upon excellent operational and tactical mobility, enhanced situational understanding, combined arms integration down to

company level, and increased dismounted strength for close combat in urban and complex terrain. Properly integrated, these core capabilities compensate for platform limitations that may exist in the close fight and lead to enhanced force effectiveness.

The primary combat platform is the IAV, and it will serve as the platform for a number of variants. Combat support and service support elements will also be based on a small number of common platforms.

To inform the Army during the early stages of Transformation and to develop doctrine for the new units, the Army began converting two brigades to an initial force design beginning in FY00. These units, built around immediately available surrogate and "in lieu of" vehicles, will convert to the interim design when IAVs are fielded.

Interim Armored Vehicle (IAV). On 16 November 2000, the Army awarded a contract for a family of IAVs to equip IBCTs capable of deployment anywhere in the world in a combat-ready configuration. The family consists of two vehicle variants (the Infantry Carrier Vehicle and the Mobile Gun System) and eight additional configurations of the Infantry Carrier Vehicle (Mortar Carrier, Reconnaissance Vehicle, Anti-Tank Guided Missile Vehicle, Fire Support Vehicle, Engineer Support Vehicle, Command and Control Vehicle, Medical Evacuation Vehicle, and the Nuclear, Biological and Chemical Reconnaissance Vehicle.

FY02 President's Budget. PB02 continues funding to field and sustain six IBCTs, including an ARNG unit, equipped with an off-the-shelf IAV and other off-the-shelf items. The first IBCT is projected to be operational by spring 2003 and the second IBCT by spring 2004. The Interim Force is designed for operational employment and is not experimental in nature. As quickly as possible, we will make it ready to respond to immediate operational requirements, thus providing the National Command Authorities and unified CINCs with enhanced strategic options.

PB02 continues funding for an eventual six IBCTs, which will be fielded in complete brigade sets. To achieve full operational capability for supporting the CINCs, however, a total of eight IBCTs is optimum and remains the Army's goal.

Legacy Force

The full spectrum of operations demands land forces for a variety of missions within the joint environment. Today's Army is dominant throughout that spectrum, and we must maintain that dominance. To this end, the Army will retain III Corps as a counterattack force, with both AC and RC forces, as the heavy modernized corps. Organizational changes and equipment program accelerations will increase both lethality and survivability of light and early entry forces. Additionally, recapitalization of critical systems must occur to forestall loss of overmatch in the Legacy Force. Selected upgrades and limited, new procurements will maintain sufficient capability in a robust Legacy Force. This also means that essential echelons above corps (EAC) units required to project and sustain III

Corps must be modernized to preserve this capability.

Objectives for the Legacy Force, our strategic hedge across the full spectrum of operations, are to:

- Retain today's level of combat overmatch over all potential adversaries.
- Sustain combat power and survivability at less weight and bulk.
- Achieve a commonality among platform, chassis, caliber, component and battlefield operating system that, to the extent possible, responds to a much broader range of operations.
- Reduce the deployed logistical footprint as enablers are identified, funded and fielded.
- Enhance strategic responsiveness.

FY02 President's Budget. Selective upgrades include variants of fielded equipment, such as the M1A2 Abrams SEP tank, M2A3 Bradley Fighting Vehicle (BFV), and AH-64D Apache Longbow helicopter.

Modernization consists of new systems, such as the High Mobility Artillery Rocket System (HIMARS); the Comanche helicopter, which will also be the foundational helicopter in the Objective Force; and the Crusader Advanced Field Artillery System, which will provide the critically needed indirect fire support until the entire force (including echelons above divisions) are converted to the Objective Force. In-stride breaching of obstacles remains a critical requirement for the Counterattack Corps, and Wolverine and Grizzly are the systems designed to meet that requirement. Unfunded requirements for Wolverine and Grizzly in the PB02 total more than $1.2 billion for the duration of the Future Years Defense Plan (FYDP).

Previous modernization strategies have identified three primary overmatch initiatives—equipment modernization and recapitalization, enhancements to light unit lethality, and improvements to strategic responsiveness. These initiatives enabled the Army to address a capabilities gap caused by the aggressive fielding of the Interim Force and front loading of the S&T effort for the Objective Force. The funding deficit is most pronounced in FY06 and FY07 and is carried largely by the Army Tactical Missile System (ATACMS) Block II, BFV A2 and A3, Lightweight 155mm Howitzer (LW 155), Family of Medium Tactical Vehicles (FMTV), and Multiple Launch Rocket System (MLRS). Modernization priority is the Counterattack Corps. The Army is prepared to assume prudent levels of risk in the remaining Legacy Force and in the Army Prepositioned Stocks (APS). The PB02 underfunds equipment upgrades for the Legacy Force by more than $14 billion. The selected modernization efforts that are planned and funded, however, are an essential step in reversing the trend of deferring modernization of aging systems. This trend must be reversed to some extent in order for the Army to maintain its ability to provide adequate readiness in support of the National Military Strategy.

Recapitalization of legacy equipment is the maintenance and systemic upgrade of fielded systems to ensure operational effectiveness and a near-zero-mile/zero-time system. The objectives of recapitalization include: (1) extending the service life; (2) reducing operating and support costs; (3) improving reliability, maintainability, safety, and efficiency; and (4) enhancing capability. Recapitalization (selective upgrade) includes P3I, extended service programs (ESPs), and major modifications. These programs do not constitute recapitalization unless the system is restored to a zero-time/zero-mile condition. The measure of success in managing fleet age with recapitalization is to achieve and maintain an average fleet age at or below half the system's expected service life. The goal is to achieve DoD service half-life metrics (Figure 10) for selected systems by 2010 and maintain that standard thereafter.

The Army also has a number of refurbishment programs that, while not meeting the technical definition of recapitalization, do significantly improve readiness and must not be overlooked. These life-extension programs effectively enhance unit and system readiness while reducing life-cycle cost. They are more effective when applied to combat support equipment and include AC, USAR, and ARNG units.

For the FY02-07 Plan, the Army makes a down payment on recapitalizing the programs (by reprioritizing among disparate recapitalization and depot maintenance programs) totaling $15.5 billion against a $23.0 billion requirement. PB02 initiates but does not fully fund recapitalization programs. As a result, most systems will not reach the half-life goal until 2013 or beyond.

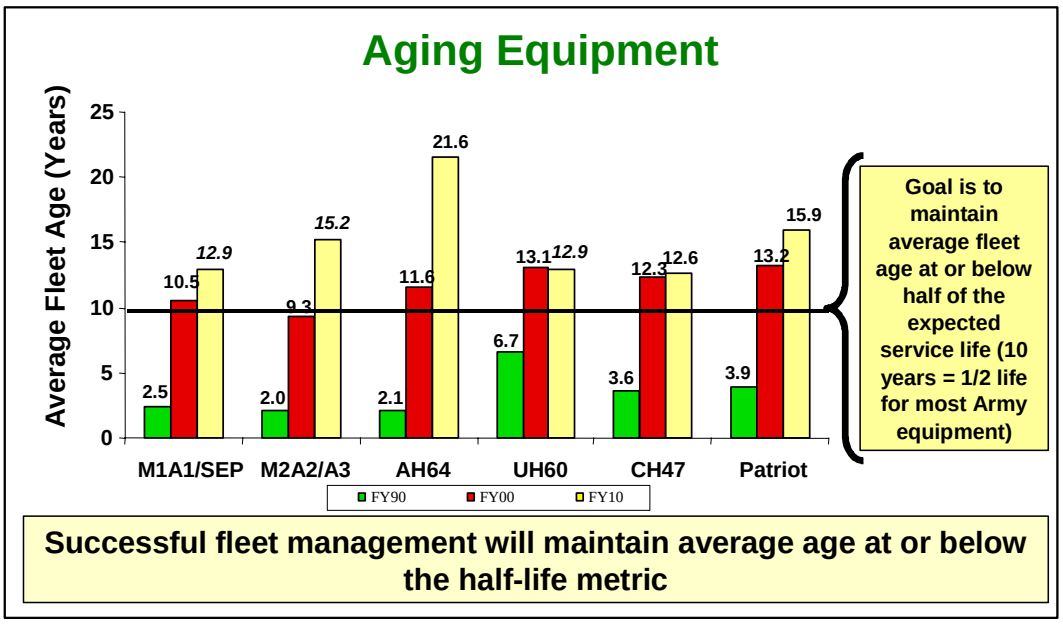

Figure 10. Aging Equipment

Summary and Conclusion

Army Transformation will ensure the world's preeminent land force maintains its ability and demonstrated will to fight and win our Nation's wars decisively—now and in the future. Transformation will make certain the Army is capable of successfully executing its assigned missions across the full spectrum of operations with vastly improved lethality, survivability, and sustainability and greatly increased strategic responsiveness and tactical mobility.

Focused on the future operational environment, properly equipped Army units will be fully capable of fighting and winning against any potential adversary in a rapidly changing, unpredictable, and asymmetrical battlefield. The *Army Modernization Plan* outlines the intent and strategy of building these future combat units that will have the agility and versatility to succeed against any opponent. The *Army Modernization Plan* also provides the overarching strategy of maintaining the current force to ensure it maintains its ability to defeat any threat while the Army is transforming itself. As the bridge to the Objective Force, the Interim Force will ensure the Army can rapidly respond to any contingency across the full spectrum of operations with significantly increased responsiveness and deployability. The *Army Modernization Plan* lays out the requirements to fully resource the Interim Force and describes the additional support needed to allow the Interim Force to fill our current warfighting capabilities gap.

The *Army Modernization Plan* focuses modernization through the three paths or vectors of Army Transformation. It also describes the critical modernization processes—Unit Set Fielding and Total Package Fielding—that will facilitate the building of combat-capable units. Although the *Army Modernization Plan* addresses the materiel aspects of modernizing and transforming the Army, it also ensures that modernization is fully coordinated and synchronized across the many doctrine, training, leadership, organizational, and soldier requirements.

The Army has accomplished much since the Army Vision was first announced in 1999. In the Army's FY02-07 budget plan, senior Army leadership made clear that it was ready to take prudent risks and make hard programming and budgeting decisions to make Army Transformation succeed. The Army "killed" seven major systems and restructured two other systems and then used the resulting savings to fund requirements for the Interim and Objective Forces. As a direct result, the Army has established two initial IBCTs at Fort Lewis, which are conducting tough, realistic training with surrogate and loaner vehicles as the Army awaits delivery of the IAV, for which a contract award was announced in November 2000. The Army has also directed significant resources into S&T requirements for the Objective Force. The results to date—the technological advances—have been remarkable. Yet, there is much to do.

The *Army Modernization Plan* is submitted to Congress with PB02, which continues to implement and fund Army Transformation.

Specifically, the Army's portion of the PB02 submission continues planned funding for the following:

- 68% of the Army Transformation, including six IBCTs as well as development of the FCS.
- USF and sustainment for six IBCTs that significantly enhance current capabilities and provide lessons-learned for subsequent Objective Force development.
- S&T and EMD for the FCS for the Objective Force.
- Key modernization programs like Comanche and Crusader.
- Selected recapitalization programs to enhance legacy system capabilities.

Significant shortfalls for support of Transformation, however, continue to exist in PB02 and specifically in the following areas for implementation of Army plans through FY07:

- Legacy Force equipment upgrades ($14 billion).
- S&T and T&E ($2.1 billion).
- Other Transformation initiatives ($13 billion, of which recapitalization is $7.5 billion, $3 billion for IBCTs, and $2.5 billion for training).

The Army has already made major changes in its plans and resourcing in support of ongoing and future Transformation. Approximately $16 billion of programmed future spending has been shifted to directly support the Transformation initiatives. The vast majority of S&T funding (96%) is devoted exclusively to developing the new technologies for the future Army, with the greatest part of that being for the FCS, the basic foundation of the Objective Force. The requirements, however, for adequately funding the necessary transitional phase of fielding interim combat brigades as well as continuing to maintain, recapitalize and modernize the existing Legacy Force stretches available resources. Maintaining sufficient readiness of the existing force while focusing on transforming to a new Army to meet future needs requires a robust, steady funding stream. Proceeding without this funding involves either the assumption of greater risk in the readiness of the Army to meet current requirements, or the costly delay in the Transformation to a more responsive and dominant Army of the future.

Within confined resources, the Army is doing well in undertaking a path of revolutionary change. Continued support and additional funding will be required to preserve the momentum of Transformation while simultaneously preserving the Army's capability to fulfill its enduring responsibility and commitment to the Nation.